

FTL/FRM Conference

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‘FRM(S) and appropriate FRM’

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Purpose of this presentation



- ❑ To clarify the differences and similarities between 'FRM' and 'appropriate FRM'
- ❑ To inform of a recent change of AMC/GMs requiring the application of 'appropriate FRM' to any night/late finish duties
- ❑ To highlight the respective responsibilities of aircrew and operators as regards the management of fatigue risks during night/late finish duties





Use of the term 'FRM' in Regulation (EU) 965/2012

Fatigue Risk Management (FRM) - ORO.FTL.120



aka 'fully-fledged FRM'

- ☐ Required for reduced rest (CS FTL.1.235 (c))
- ☐ Required for longer FDP when crew members are in an unknown state of acclimatisation (ORO.FTL.205)
- ☐ No stand-alone approval i.e. the FRM, when required, is approved as part of the operator's IFTSS (ORO.FTL.125(b))

Fatigue management principles (CS FTL.1.230)

- ☐ Required to protect an 8-hour sleep opportunity during reserve during which the CM is not contacted by the operator

Appropriate FRM

- ☐ Required for [long]* night duties - CS FTL.1.205

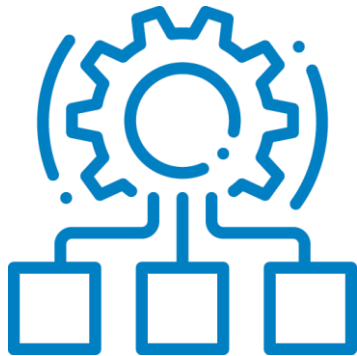


FRM principles

- ☐ Required for rostering [long]* night duties - GM1 CS FTL.1.205(a)(2)



FRM/appropriate FRM: differences



‘FRM’ as per ORO.FTL.120 is a system:

- ☐ specially designed to manage particular fatigue risks, dedicated resources
- ☐ to address deviation(s) from prescriptive limits
- ☐ using reactive, proactive and enhanced predictive tools to identify fatigue hazards and address fatigue risks

‘Appropriate FRM’:

- ☐ uses an already active SMS (ORO.GEN.200) to manage particular fatigue risks
- ☐ no deviation from prescriptive limits
- ☐ using reactive and proactive tools to identify fatigue hazards, as well as some basic predictive tools

Differences are in the approach and tools!



FRM/appropriate FRM: commonalities

- ☐ Operating within the limits does not mean you are safe – e.g. apply ‘appropriate FRM’
- ☐ Operating outside the limits does not mean you are unsafe – set an ‘FRM’ system to predict and mitigate fatigue risks



- ☐ In both cases, operators need to apply a scientific approach to crew rostering, based on analysis of contextualised data, using SRM process and operational experience

- ☐ In both cases, the management of crew fatigue is a shared responsibility

Scientific principles common to both:

- ☐ need for adequate sleep
- ☐ need for recovery period from sleep debt
- ☐ circadian effects on sleep and performance
- ☐ influence of workload



'Appropriate FRM' explained

EASA ED Decision 2023/023/R published 12/2023

- ❑ incorporates recommendations from the 2019 study on Effectiveness of EU FTL (FTL#1)



- Night duties, both those longer and those shorter than 10 hours, are associated with an increased probability of high levels of fatigue at Top of Descent (TOD)
- There is an increased probability of high levels of fatigue at TOD during non-consecutive late finish and non-consecutive night duties
- Three subtypes of night duties are distinguished and ranked based on the probability of occurrence of high levels of fatigue at TOD

- ❑ inserts new guidance material that clarifies the 'appropriate FRM' in relation to night/late finish duties and its safety objectives

Clarifications to ORO.FTL.120 as regards $FRM+S=FRMS$ to be introduced with another RMT



Night duties and late finish duties amendment

❑ amended CS FTL.1.205 (a)

CS FTL.1.205 Flight duty period (FDP)

(a) Night duties and late finish duties under the provisions of points ORO.FTL.205 (b) and (d) comply with the following:

- (1) When establishing the maximum FDP for consecutive night duties, the number of sectors is limited to 4 sectors per duty.
- (2) The operator applies appropriate fatigue risk management (appropriate FRM) to actively manage the fatiguing effect of night duties of more than 10 hours and late finish duties in relation to the surrounding duties and rest periods.

(3) When planning and implementing appropriate FRM measures to reduce fatigue during night duties, the operator distinguishes between the following subtypes of night duties and ranks them based on the probability of occurrence of high levels of fatigue at Top of Descent (TOD):

(1) FDPs with a start time between 02:00 and 04:59;

(2) FDPs with an end time between 02:00 and 05:59 and a start time at 01:59 or earlier; and

(3) FDPs with an end time at 06:00 or later and a start time at 01:59 or earlier.

[...]

❑ amended AMC1 ORO.FTL.250 – applicable from 19 June 2024

AMC1 ORO.FTL.250 Fatigue management training

TRAINING SYLLABUS FATIGUE MANAGEMENT TRAINING

The training syllabus should contain the following:

- (a) applicable regulatory requirements for flight, duty and rest;
- (b) the basics of fatigue including sleep fundamentals and the effects of disturbing the circadian rhythms;
- (c) the causes of fatigue, including medical conditions that may lead to fatigue;
- (d) the effect of fatigue on performance;
- (e) fatigue countermeasures;
- (f) the influence of lifestyle, including nutrition, exercise, and family life, on fatigue;
- (g) familiarity with sleep disorders and their possible treatments;
- (h) where applicable, the effects of long range operations and heavy short range schedules on individual;
- (i) the effect of operating through and within multiple time zones; and
- (j) the crew member responsibility for ensuring adequate rest and fitness for flight duty;
- (k) an optimum use of sleep opportunities, in particular before crew reporting for night duties or late finish duties and during an FDP with in-flight rest.



Night duties and late finish duties amendment

□ new GM1 CS FTL.1.205(a)(2)

GM1 CS FTL.1.205(a)(2) Flight duty period (FDP)

APPROPRIATE FATIGUE RISK MANAGEMENT (APPROPRIATE FRM)

The term 'appropriate FRM' is a term chosen to refer to a set of principles and tools that support the operator and their operational personnel in managing particular fatigue hazards and associated risks through the safety risk management (SRM) process within the operator's management system, in full compliance with the duty time, flight time limits and rest requirements defined by Subpart ORO.FTL

It should be distinguished from the fully-fledged fatigue risk management (FRM) system described under ORO.FTL.120.

An FRM system under ORO.FTL.120 is a scientifically based, data-driven complement or alternative to the prescriptive regulation of flight and duty time and rest requirements, which manages crew fatigue in a flexible manner with due consideration to the risk exposure and the nature of operations. Operators need such FRM system when deviating from the certification specifications or when applying a mix of prescriptive rules and flexible arrangements.

Conversely, an 'appropriate FRM' concept supports implementation of the rules and is applied without deviating from them.

□ new GM2 CS FTL.1.205(a)(2)

GM2 CS FTL.1.205(a)(2) Flight duty period (FDP)

NIGHT DUTIES AND LATE FINISH DUTIES — APPROPRIATE FATIGUE RISK MANAGEMENT (APPROPRIATE FRM)

- (a) The operator should apply appropriate FRM to night duties and late finish duties:
 - (1) in the safety risk management process by assessing fatigue-related hazards in relation to a particular duty and mitigating fatigue-related risks and consequences to an acceptable level or to a level as low as reasonably practicable; and
 - (2) in the crew rostering process by applying scientifically based principles.
- (b) For the purpose of applying appropriate FRM, the operator should monitor night duties and late finish duties, and collect data by means of:
 - (1) crew fatigue reports;
 - (2) fatigue metrics and associated targets and thresholds;
 - (3) proactive fatigue data collection tools, such as but not limited to sleep-wake diaries or fatigue survey questionnaires, to collect relevant data to feed its fatigue risk assessment process;
 - (4) fatigue predictive tools, such as but not limited to the Prior Sleep Wake Model (described in GM5 CS FTL.1.205(a)(2));
 - (5) the safety assurance process.



Night duties and late finish duties amendment

❑ amended GM3 CS FTL.1.205(a)(2) (previous GM1)

❑ new GM4 CS FTL.1.205(a)(2)

GM13 CS FTL.1.205(a)(2) Flight duty period (FDP)

NIGHT DUTIES AND LATE FINISH DUTIES — APPROPRIATE FATIGUE RISK MANAGEMENT (APPROPRIATE FRM)

- (a) When rostering night duties ~~of more than 10 hours (referred to below as 'long night duties')~~, it is critical for the crew member to obtain sufficient sleep before such duties when ~~he/she~~ he or she is adapted to being awake during daytime hours at the local time where ~~he/she~~ he or she is acclimatised. To optimise alertness during ~~on long~~ night duties, the likelihood of obtaining sleep as close as possible to the start of the FDP should be considered, when rostering rest periods before ~~long~~ night duties, by providing sufficient time to the crew member to adapt to being awake during the night. Rostering practices leading to extended wakefulness before reporting for night duties should be avoided.

GM4 CS FTL.1.205(a)(2) Flight duty period (FDP)

CONSECUTIVE NIGHT DUTIES AND CONSECUTIVE LATE FINISH DUTIES — APPROPRIATE FATIGUE RISK MANAGEMENT (APPROPRIATE FRM)

Appropriate FRM that may be applied to consecutive night duties or consecutive late finish duties include:

- (1) rostering a block of identical duties (late finish duties or night duties) rather than rostering mixed duties;
- (2) starting a block of late finish duties or night duties with a shorter FDP;
- (3) rostering not more than one transition between two different types of disruptive duties, between two extended recovery rest periods.



Night duties and late finish duties amendment

❑ new GM5 CS FTL.1.205(a)(2)

GM5 CS FTL.1.205(a)(2) Flight duty period (FDP)

APPROPRIATE FATIGUE RISK MANAGEMENT (APPROPRIATE FRM) — THE PRIOR SLEEP WAKE MODEL

- (a) The Prior Sleep Wake model (PSWM) is a simple method that may be used among other methods to predict the likelihood of accumulating fatigue or sleep debt and to assess crew fitness for duty, based on scientific evidence and principles.

Most evidence suggests that to maintain optimum performance, health, and well-being, individuals should get between 7 and 9 hours of sleep during a 24-hour period.

Many studies have investigated how decreasing levels of sleep and increasing time awake affects performance. In general, research has found that performance begins to become impaired after getting less than 5 hours of sleep over a 24-hour period. Performance also becomes impaired if sleep consistently falls below 6 hours per night on an ongoing basis.

Sleepiness is related to factors such as the time of day, the time since awakening and the duration of prior sleep. As prior sleep decreases and time awake increases, the likelihood of fatigue-related symptoms, errors, and incidents also increases.



Night duties and late finish duties amendment

Operators' responsibilities in the context of appropriate FRM to any night duty and late finish duty

- ☐ Differentiate/rank night duties according to the three subtypes and plan mitigating measures with the appropriate priority
- ☐ identify safety critical late finish duties and plan mitigating measures
- ☐ communicate on the use of available rest facilities
- ☐ promote the optimum use of sleep opportunities
- ☐ if possible, provide suitable accommodation at or near the reporting point
- ☐ monitor duties in question and collect relevant data
- ☐ establish procedures for crew members to report insufficient prior sleep
- ☐ maintain the safety assurance process
- ☐ provide training to aircrew on how to determine their actual level of fatigue and on fatigue-mitigation strategies
- ☐ provide advice regarding exposure to daylight, sleep, physical activity, and nutrition





Night duties and late finish duties amendment

Aircrew responsibilities in the context of appropriate FRM to any night duty and late finish duty

- ☐ report fit for night/late finish duty
- ☐ make optimum use of sleep opportunities to obtain adequate sleep:
 - in the afternoon, prior to a night duty
 - prior to a late finish duty
 - during FDPs with in-flight rest
 - during a long turnaround
- ☐ manage out of work activities so they do not affect their performance during night/late finish duty
- ☐ be aware of their prior sleep periods and wakefulness
- ☐ monitor their health
- ☐ report to their supervisor when prior sleep and/or wakefulness not sufficient
- ☐ report when they believe fatigue during night/late finish duty contributed to a reduction in safety margins
- ☐ participate in fatigue surveys and data collection campaigns



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